## Agremax Information

Lenny Grossman to: Susan Thorneloe 08/22/2012 11:03 AM

From: Lenny Grossman/R2/USEPA/US
To: Susan Thorneloe/RTP/USEPA/US@EPA
History: This message has been forwarded.

Susan,

As requested. Please forward to Andy.

(Please note that I cannot find any SPLP results - I may have been thinking of another case).

Best regards,

Len

Information provided by AES:

*AES Puerto Rico generates electricity using high-quality Colombian coal (11,300 BTU/lbm) with low-sulfur content (<1%) as fuel. It is one of the cleanest coal plants in the world and the lowest cost producer of electricity in Puerto Rico. With a net generation of 454 Mega-Watts, it accounts for more than 15% of the electricity of the island. The coal is received at Las Mareas Harbor by sea, using cargo ships. The material is transferred to the main facility by the ship's auto discharge system, through fully enclosed conveyor belts which control fugitive dust emissions of the operation.*

*At the plant, the coal is stored in piles to eventually be transferred to a crusher where the size of the coal is reduced to approximately ¼ of an inch. The crushed coal is transferred through another enclosed conveyor to 8 silos that feed the Circulating Fluidized Bed boilers (CFB's). CFB's are clean coal technology. The Coal Combustion Products generated are fly ash and bed ash. The boilers maintain a negative pressure which allows the fly ash to travel through ducts to a circulating dry scrubber (where hydrated lime is added for Sulfur Dioxide (SO2) scrubbing) and an electrostatic precipitator, whose function is to collect the fly ash. The collected material is transferred through a pneumatic system up to the fly ash silo.*

*During the combustion process, limestone is injected into the boiler with the coal for SO2 emission control. The lighter limestone particles mix with the fly ash and the heavier particles are collected by gravity in the bottom of the boiler as bed ash. The fly ash and bed ash are stored in different silos. The transfer and storage system is fully enclosed.*

*The equipment used to produce the manufactured aggregate is located beneath the fly and bed ash silos. These are:*

- *An enclosed pneumatic system to transport the fly ash to the ash conditioner.*
- *The bed ash is transferred from the silo to the ash conditioner through a control valve to maintain the desired flow of material.*
- *The ash conditioner is a machine similar to the one used to mix cement in construction projects, but designed to handle ash and fully enclosed to control fugitive dust emissions.*

*The manufactured aggregate (whose commercial name is Agremax) is made of 80% fly ash and 20% bed ash. It enters the ash conditioner by the upper part of one end the unit, which has two axles and nine water sprinklers. The material is mixed and hydrated throughout the conditioner and exits by the underside of opposite end. The*

*product is then transported to the aggregate yard by an enclosed conveyor belt. Once in the yard, the aggregate is laid in a process similar to that of concrete and it is left to cure for 7 to 14 days. Since the material is moist, fugitive dust emissions are minimized. After the curing period we have an artificial solid rock. This rock is broken using heavy machinery and transferred to a crushing machine to reduce its size and make it more manageable and easier to transport.*

*The final product is a manufactured aggregate that replaces natural commercial aggregates in different construction applications.*

Picture taken by me at the March 2012 sampling inspection:

R0012504.JPG

The large hopper on the left is bottom ash, and the smaller hopper on the right is fly ash. These are mixed and hydrated, and the resulting pozzolonic aggregate (Agremax) is then transferred by conveyer belt to the ground, where it is further hydrated and allowed to cure (harden) for several weeks or longer. As depicted, front loaders are used to handle the aggregate.